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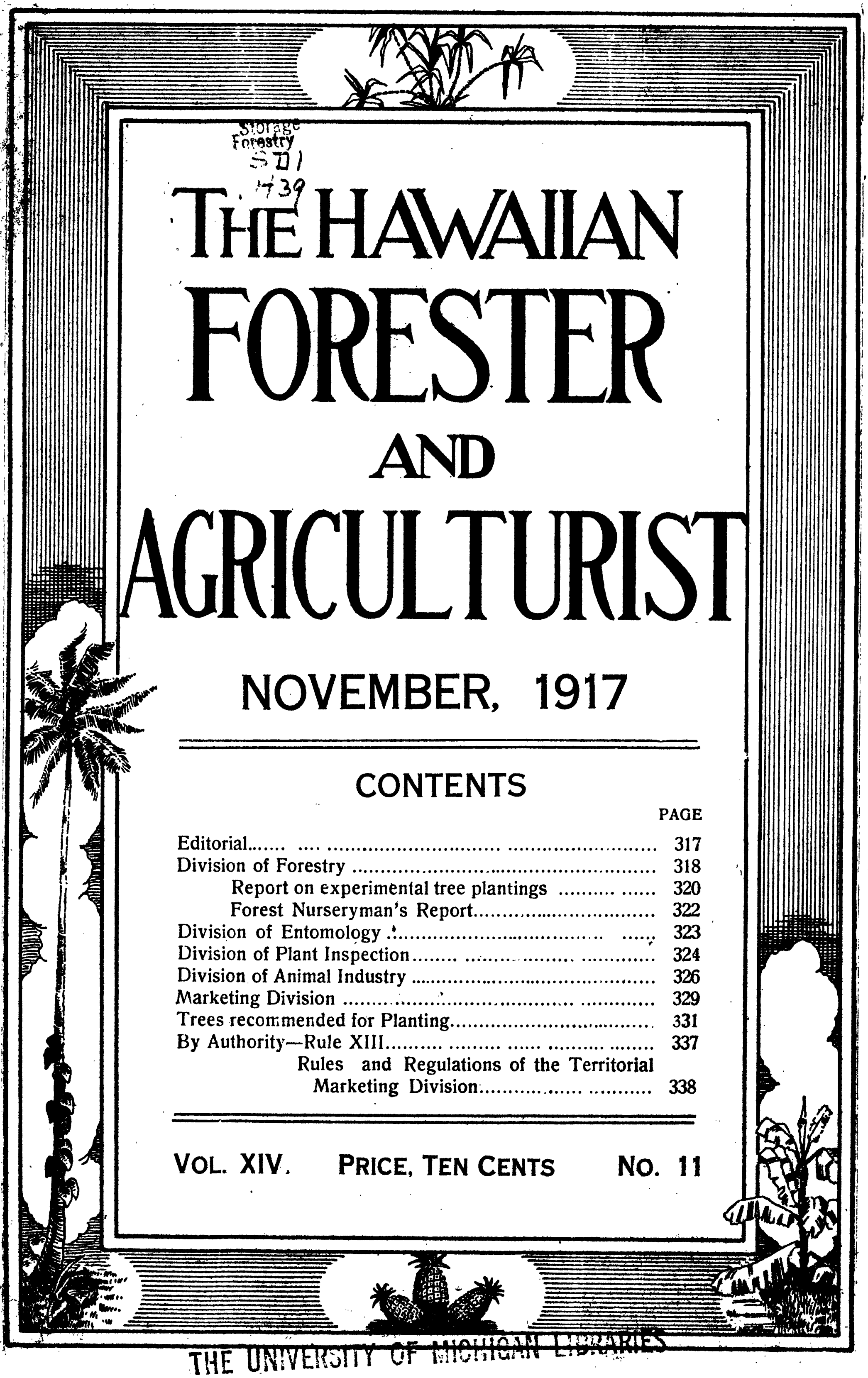

THE HAWAIIAN FORESTER AND AGRICULTURIST

NOVEMBER, 1917

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The Hawaiian Forester and Agriculturist

A Monthly Magazine of Forestry,
Entomology, Animal Industry
and Agriculture.

Issued under the direction of the Board
of Commissioners of Agriculture
and Forestry, Territory of Hawaii.

Address all communications to
DANIEL LOGAN
Editor "THE FORESTER"
P. O. Box 366, Honolulu, T. H.

For business relating to subscriptions
or advertising, address
HAWAIIAN GAZETTE CO., LTD.,
Publishers, Honolulu, T. H.

Price 10c. per copy; $1.00 a year; Foreign, $1.25
Entered as second-class matter at the Post Office at Honolulu, Hawaii.

Board of Agriculture and Forestry

DIVISION OF FORESTRY.

FOREST AND ORNAMENTAL TREE SEED AND SEEDLINGS FOR SALE AT THE GOVERNMENT NURSERY.

The Division of Forestry keeps constantly on hand at the Government Nursery, seed and seedlings of the important native and introduced trees. These are sold at prices just covering the cost of collection or growing.

The list includes both forest and ornamental trees, such as Silk Oak, Koa, various species of Eucalyptus, Golden and Pink Showers, Pride of India, Poinciana, Albizzia, etc. The price of the seed varies from 10 to 50 cents per ounce. The seedlings may be had for 2½ cents each, except a few kinds which are 5 cents. Seed of the various palms is also for sale, the price per 100 varying from $1.00 to $2.50. All seed is tested before being sent out, which insures its being good.

All communications in regard to seed or trees should be addressed to David Haughs, Forest Nurseryman, Box 207, Honolulu, Hawaii.

C. S. JUDD,
Superintendent of Forestry.

DIVISION OF ENTOMOLOGY.

To give information about insects free of charge is one of the duties of this Division, and Hawaiian readers are hereby invited to make inquiry in person and by mail. In order to be able to advise intelligently or send the right kind of useful insects for relief, we like and sometimes it is indispensable for us to see the insects suspected or caught in the act, also specimens of the injury. In a tin with a hole or two, or a wooden box, specimens may be mailed by parcels post. When specimens are not accompanied by letter, always write your name and address in the upper left-hand corner of the package. Address all communications, SUPERINTENDENT DIVISION OF ENTOMOLOGY, P. O. BOX 207, HONOLULU, HAWAII.

EDW. M. EHRHORN,
Superintendent of Entomology.

PUBLICATIONS FOR DISTRIBUTION.

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A complete list of the publications of the Board available for distribution (together with the titles of certain issues now out of print) is to be found on the cover of the last biennial report.

Applications for publications should be addressed to the Mailing Clerk, P. O. Box 207, Honolulu, Hawaii.

THE HAWAIIAN FORESTER AND AGRICULTURIST

VOL. XIV. HONOLULU, NOVEMBER, 1917. NO. 11

This issue contains a valuable contribution from Mr. J. F. Rock, the Consulting Botanist of the Board, on the subject of different species of trees which are best adapted for planting in different regions in these islands for different purposes. This paper is a part of the fulfillment of the working plan on this subject which was printed in the November, 1916, issue of the *Forester,* (pp. 416-418, Vol. XIII), and the subject headings follow the outline in the working plan. It may be stated that a large number of the trees recommended by Mr. Rock have been tried here with success both in former years and very recently by the Division of Forestry and efforts are being made to try out the additional species which are new to the Territory.

On the By Authority page of this issue is printed Rule XIII of the Division of Animal Industry concerning the keeping and breeding of rabbits in the Territory. This rule, which was passed by the Board and approved by the Governor on October 30, 1917, puts into effect the provisions, concerning the keeping and breeding of rabbits or hares, which were authorized by Act 50 of the Session Laws of Hawaii of 1917. The purpose of the act and Rule XIII is to regulate the keeping of these animals in a confined state so that they will not escape and become a possible menace to agricultural interests in the Territory. All keepers of rabbits or hares who have not already done so should apply at once for a permit on a form which will be furnished by the Territorial Veterinarian, Box 207, Honolulu.

Progress is being made in the testing of dairy cattle affected with bovine tuberculosis under the provisions of Act 121 of the Session Laws of Hawaii of 1917, as shown in the October report of the Assistant Territorial Veterinarian. This act carries an appropriation for the indemnification of owners of condemned cattle and it is a pleasure to report that owners of such cattle are coöperating with the Division of Animal Industry in a splendid manner in the efforts to eradicate this disease and establish a safe milk supply for the Territory.

The successful results obtained from the planting of the California timber pine trees, such as Jeffrey pine and Coulter pine, in the experimental plot on the higher slopes of Haleakala, as reported in this issue, are encouraging and show the possibility of what may be done in the way of growing trees for the production of construction timber.

The tree planting of the Division of Forestry continues to be centered on water producing areas and during October over 1000 koa trees were planted on a part of the Honolulu Watershed forest reserve.

The rules and regulations of the Territorial Marketing Division governing the conduct of the business of this Division, which were approved by the Board on October 29, 1917, are printed on the By Authority page of this issue and the attention of customers is invited to them.

A profit is reported by the Acting Superintendent in all departments of the Territorial Marketing Division for the month of October. This is encouraging and it is hoped that continued improvement will be shown in this new Division of the Board.

Division of Forestry

Honolulu, November 13, 1917.

Board of Commissioners of Agriculture and Forestry, Honolulu.

GENTLEMEN:—I respectfully submit the following routine report of the Division of Forestry for the month of October, 1917:

MAUI TRIP.

From October 5 to 10, I was on the Island of Maui investigating several forest matters. Forest Ranger James Lindsay accompanied me. The proposed addition to the Makawao forest reserve, consisting of a remnant of government forest land of 263 acres between the present reserve, private land, and the new Haleakala homestead tract, which will soon be recommended for setting apart, was thoroughly gone over and the locations, along the boundary where stretches of fence will be necessary, were determined.

The Kula forest reserve was visited and the question of ridding the land of wild cattle investigated. This is a matter which must be accomplished before tree planting can be undertaken on the reserve and it has already been referred to you in a special report.

It was a matter of great interest to notice the extensive, natural spread of the black wattle tree in the Kula district at the general elevation of 3000 feet above sea level.

A visit was also made to three of the experimental tree plots on the slopes of Haleakala between the elevations of 6700 and 8300 feet, on which my predecessor planted various temperate zone trees with funds contributed by the U. S. Forest Service, seven and eight years ago. As will be seen in the special report, herewith attached, certain timber pine trees of California have done very well on one of the plots and may be considered as suitable trees for planting at this elevation.

FOREST PLANTING.

In addition to the cleaning around planted trees on the Honolulu watershed in Manoa and Makiki valleys and preparing the ground for additional planting, there were planted out in open government land in Manoa during the month 1013 koa trees and 44 Japanese cedar or a total of 1057 trees.

On the Kealia reserve on Kauai, Ranger Lovell planted out 325 Japanese cedar and swamp mahogany trees and a consignment of 1650 trees was sent to him for additional planting.

Approximately one pound of the Chir pine, *Pinus longifolia,* a commercial timber tree, was received from India by Consulting Botanist J. F. Rock and turned over to this Division. Some of these were personally planted out in seed pots on the experimental tree plots on Haleakala while on my recent trip to Maui, and the balance turned over to parties on Maui for planting in favorable localities at the higher elevations.

The general working plan for reforesting areas for the conservation of water was completed, after it had been gone over by Commissioner Giffard, was accepted by the Board, transmitted to the H. S. P. A. and has since been published as an appendix to the report of the Committee on Forestry of this Association for the year ended September 30.

Preparations for the distribution of trees for planting on Arbor Day, which will be celebrated this year on November 16, have been made by the Forest Nurseryman who has on hand a sufficient supply of shade, forest and ornamental trees for this purpose.

PROTECTION OF BIRDS.

Eight wooden signs embodying the essence of Rule IV of this Division pertaining to the protection of birds have been made and, on October 25, one of these was posted near the landing on the Island of Popoia, opposite Kawailoa, Oahu. On account of the high sea it was not found possible to take additional signs that day to Mokulua, two other nearby islands also included in this rule.

KAHOOLAWE.

In accordance with the instructions received at the Board meeting on October 29, a permit, good for 90 days, was issued the same day to Mr. J. C. Crane to remove the goats from the Island of Kahoolawe. I have since heard from him that he would be ready to start in on this work just as soon as his sampan is repaired.

MISCELLANEOUS.

At the request of the President of the Board of Health, Consulting Botanist J. F. Rock has kindly consented to coöperate in the compilation of a list of herbs and plants having medicinal properties in order to assist in carrying out the purpose of Act 195 of the last legislature which calls for a report on this subject.

The Maole conduit in Nuuanu valley was inspected and a few of the felled trees along the ditch were found to be in need of lopping in order to reduce their unsightly appearance and the fire danger. The matter was called to the attention of the Land Commissioner who issued the license and he has requested the licensees to attend to the matter.

One day was spent in the Waianae region with a holder of a license from the Land Office to gather algaroba beans, in order to advise on methods of thinning out the thick trees so as to increase the yield of pods and facilitate gathering them.

Another day was spent on Tantalus with a government surveyor investigating proposed exchanges of land requested by the Land Commissioner which will soon be presented for approval.

KAUAI TRIP.

On October 30 I sailed for Kauai and the last day of the month was spent with the Surveyor of the Territory in going over the proposed camping sites in the Na Pali-Kona forest reserve back of Waimea canyon and determining methods for describing camp site areas in permits.

Respectfully submitted,

C. S. JUDD,
Superintendent of Forestry.

REPORT ON THE EXPERIMENTAL TREE PLANTINGS ON THE SLOPES OF HALEAKALA, MAUI, TERRITORY OF HAWAII, ESTABLISHED BY THE DIVISION OF FORESTRY OF THE BOARD OF AGRICULTURE AND FORESTRY IN COOPERATION WITH THE U. S. FOREST SERVICE.

By C. S. JUDD, *Superintendent of Forestry.*

The examination of these trees was made on October 10, 1917, approximately eight years after the first seedlings had been planted out.

Progress reports on the growth of these trees have been made during the past years by my predecessor, Professor Ralph S. Hosmer, who was responsible for the establishment of these experiments. The following report therefore sets forth only the condition of the trees as they are today.

In visiting these plots of trees, which are found on the exposed slopes of Haleakala, Maui, between the elevations of 6700 and 9000 feet above sea level, I was impressed with the unfavorable conditions for tree growth. The soil consists of freshly decomposed volcanic rock, is thin, and is subject to a great deal of wash from the mountain during stormy seasons, and the native vegetation found there consists of only stunted trees and shrubs indicating an adverse exposure. The conditions, therefore, present a severe test of the possibility of growing temperate zone trees at this situation and it is to be wondered that the results have been as good as they are.

The following tables show the success that has resulted from the planting of these introduced trees:

Plot I. Elevation 6700 feet. East side of Puu Nianiau.

		No.	*Max. Size*		
Name of Tree	*Planted*	*Alive*	*Diam.*	*Ht.*	*Condition*
Jeffrey pine, *Pinus jeffreyi*.	1909	17	3½″	11′	Excellent
Coulter pine, *Pinus coulteri*.	1909	38	3″	10′	Excellent
Jack pine, *Pinus divaricata*.	1910	7	2″	9′	Good
Scotch pine, *Pinus sylvestris*	1910	3	2″	7′	Good
Norway spruce, *Picea excelsa*	1910	66	2″	6′	Fair
Incense cedar, *Libocedrus decurrens*	1909	18	1″	6′	Fair
White pine, *Pinus strobus*..	1910	24	1″	5′	Fair
European larch, *Larix europea*	1910	2	½″	1′	Poor
Red cedar, *Juniperus virginiana*	1910	2	½″	1′	Poor

Plot II. Elevation 6900 feet. Southwest side of Puu Oili.

Jeffrey pine, *Pinus jeffreyi*.	1909	9	2″	7′	Good
White pine, *Pinus strobus*..	1910	4	1″	3′	Fair

Plot III. Elevation 8300 feet. ¾ mile above Plot II.

Jack pine, *Pinus divaricata*.	1910	1	½″	4′	Poor
Norway spruce, *Picea excelsa*	1910	1	½″	2′	Poor
White pine, *Pinus strobus*..	1910	4	½″	2′	Poor

Plot IV. Elevation 9000 feet. ¾ mile North of Kilohana.

This plot was not visited since the local ranchman told me that none of the trees planted on it were alive.

In analyzing the above results it should be borne in mind that Plot I possesses conditions more favorable for tree growth on account of better soil and more moisture. It is not surprising, therefore, that the best results are found on this plot. The other plots receive less rainfall and the comparative failure of the trees on these other plots is probably due chiefly to this cause.

It will readily be seen that species of the true pine family have done the best and may be considered as a success in the planting at this elevation. Foremost among these stand out the two timber pines of California, the Jeffrey pine and the Coulter pine, and their growth here of 10 to 11 feet in height in eight years stands up rather well in comparison with growth in their native habitat. The Jack pine of Northeastern America and the Scotch pine and Norway spruce from Europe come next in successful growth and it would be safe to plant any of these five in the same region on an extensive scale. The other species should be experimented with further before being planted out extensively. It is interesting to note that on one of the Scotch pine trees, only seven years old, cones had begun to form.

Several different species of eucalyptus and trees of the silk oak, *Grevillea robusta,* were found on all three plots, but none of them was especially flourishing with the exception of the blue gum, *E. globulus,* and silk oak, specimen trees of which were found to be, respectively, 12 and eight feet high.

The seed spots established more recently with few exceptions do not show up at all well.

To further the experiments, seed spots of the Chir pine of India, *Pinus longifolia,* were sown in Plots I to III at the time of this examination.

FOREST NURSERYMAN'S REPORT.

Honolulu, November 12, 1917.

Superintendent of Forestry, Honolulu, T. H.

DEAR SIR:—I herewith submit a report of the principal work done during the month of October:

NURSERY.

	In Seed Boxes.	In Boxes Transplanted.	Pot Grown.	Total.
Sold	....	....	193	193
Gratis	3500	950	527	4977
	3500	950	720	5170

COLLECTIONS.

Collections on account of plants sold amounted to	$ 2.75
Rent of office building, Nursery grounds, for August	35.00
Total	$37.75

PLANTATION COMPANIES AND OTHER CORPORATIONS.

The distribution of plants under this heading amounted to 1000 in transplant boxes.

We have on file orders for 70,000 seedlings to be delivered within the next months.

MAKIKI STATION.

The sawmill is now in proper working order. We have cut up a number of fence posts, also some sample specimens of timber trees to be found growing on the Islands. Other work done at the station has been principally routine.

HONOLULU WATERSHED PLANTING.

The men have been kept busy during the month hoeing and clearing away grass and weeds from the trees lately planted. We are making preparation for more planting to be done in Makiki main valley.

ADVICE AND ASSISTANCE.

The writer has been called upon to give advice and make calls as follows: Calls made, 6; advice by telephone, 12; advice by letter, 6; advice given people calling at Nursery, 8.

Respectfully submitted,

DAVID HAUGHS,
Forest Nurseryman.

Division of Entomology

Honolulu, November 12, 1917.

Board of Commissioners of Agriculture and Forestry, Honolulu.

GENTLEMEN:—During the month of October the insectary handled 27,400 pupae of the melon fly, from which there were bred 634 females and 573 males, *Opius fletcheri*.

The distribution of parasites was as follows:

Opius fletcheri.

	Females.	Males.
Oahu:		
Moanalua	470	400
Moiliili	185	175

Diachasma fullawayi.

	Females.	Males.
Oahu:		
Kalihi	50	20
Nuuanu	10	10

Diachasma tryoni.		
Oahu:		
Kalihi	30	40
Nuuanu	50	60
Hawaii:		
Kohala	100	60
Tetrastichus.		
Oahu:		
Kalihi	200	...
Chalcid.		
Oahu:		
Moanalua	200	...
Paranagrus (Corn leaf hopper parasite).		
Oahu:		
Makiki Nursery	2650	...

Very respectfully,

D. T. FULLAWAY,
Entomologist.

Division of Plant Inspection

Honolulu, October 31, 1917.

Board of Commissioners of Agriculture and Forestry, Honolulu, T. H.

GENTLEMEN:—I respectfully submit my report of the work done by the Division of Plant Inspection for the month of October, 1917, as follows:

During the month there arrived at the port of Honolulu 37 vessels of which 17 carried vegetable matter consisting of the following:

Disposal.	*Lots.*	*Parcels.*
Passed as free from pests	1071	33,304
Fumigated	2	27
Burned	24	24
Returned	3	3
Total inspected	1100	33,358

Of these shipments 33,118 packages came as freight, 127 packages as baggage of passengers and immigrants and 113 packages as mail matter.

RICE AND BEAN SHIPMENTS.

During the month 3369 bags of rice and 337 bags of beans arrived from Japan and Oriental ports and after careful inspection were found free from pests.

PESTS INTERCEPTED.

Approximately 3293 pieces of baggage belonging to passengers and immigrants from foreign countries were examined and from the same were seized and destroyed by burning eight packages of fruit and 14 packages of vegetables.

On October 12, two packages of palm seeds from Singapore came by mail for Mr. J. F. Rock. These were fumigated with carbon bisulphide as a precaution. Also a package of Japanese poha (*Physalis alkekengi*) in the mail from Japan. This was returned as unmailable.

On October 16, one box of pears from California by Wells Fargo and Company's Express was destroyed as the fruit was badly infested with codling moth.

On October 23, 25 coconuts arrived in the Luka from Fanning Island and these were fumigated before delivery as they were infested with scale (*Aspidiotus destructor*).

On October 24, one package of tree seeds and a package of plum pits from Japan in the mail were returned as unmailable; and one package of corn from Japan found in the baggage at the Immigration Station was seized and burned.

On October 12, Mr. F. X. Williams returned from Manila and brought with him several packages of beneficial insects for the Planters' Station. The usual precautions were taken with the soil and packing material.

HILO INSPECTION.

Brother M. Newell reports the arrival of seven steamers and two sailing vessels. Four steamers carried vegetable matter, the sailing vessels lumber. Three thousand two hundred forty-six packages of fruits and vegetables were inspected and found free from pests. During the month the S. S. Anyo Maru arrived direct from Japan and brought 3735 bags of rice, 301 bags of beans, two bags of peas and six packages of vegetable seeds, a total of 48 lots, which were passed as free from pests.

KAHULUI INSPECTION.

Mr. Edwin C. Moore, Fruit and Plant Inspector for Maui, reports the arrival of seven vessels at the Port of Kahului. Two steamers carried vegetable matter consisting of 11 lots and 719 packages. One crate of white turnips was found infested with the radish maggot and was dumped at sea; the rest of the shipments were passed as free from pests.

INTER-ISLAND INSPECTION.

Sixty steamers plying between Honolulu and other island ports were attended to and the following shipments were passed as free from pests.

Taro	543 bags.
Vegetables	352 packages.
Plants	207 "
Fruits	23 "
Total inspected	1116 packages.

Seven packages of plants and three packages of fruit were seized and refused shipment on account of infestation and undesirable soil.

Respectfully submitted,

E. M. EHRHORN,
Chief, Division of Plant Inspection.

Division of Animal Industry

Honolulu, November 9, 1917.

Board of Commissioners of Agriculture and Forestry, Honolulu.

GENTLEMEN:—I have the honor to submit herewith my report on the work of the Division for the month of October:

TUBERCULOSIS CONTROL.

	Tested.	*Passed.*	*Condemned.*
C. H. Bellina	230	173	57
C. H. Bellina	72	58	14
C. H. Bellina	19	10	9
C. M. Cooke	9	9	0
L. Hoon Chan	2	2	0
L. Hoon Chan	1	1	0
Waimanalo Plantation	133	132	1
K. Helau	8	8	0
Waialae Dairy	479	372	107

The above list shows a total of 953 head tested out of which number 765 were passed and tagged and 188 condemned and branded.

Of the above condemned animals 187 have been appraised and slaughtered under the provisions of Act 121 of the 1917 Session Laws which provides for the compensation of owners of condemned tuberculosis animals.

The number of condemned animals was considerably in excess of what was anticipated but considering the high percentage of tuberculosis present from the beginning in the two dairies concerned and that more than a year has passed since the last test, a large number of diseased cattle should have been expected.

The influence of the Compensation Act is already making itself felt in that owners are desiring more frequent tests and are more willing to coöperate with the Board in its efforts toward the entire eradication of tuberculosis. The considerable opposition which has been experienced in certain quarters has apparently melted away, as the dairymen are realizing the efforts the Board is making to help them and to establish for this Territory a safe milk supply.

The condemned cattle from the Kuliouou dairy showed a considerable amount of disease on post mortem examination and three carcasses had to be condemned entire as unfit for human consumption.

On the other hand the condemned cattle from the Waialae dairy, though large in number, showed surprisingly little disease and, while all showed the presence of tuberculosis in one or more organs in the body, none had to be condemned.

A few showed open lesions in the lungs and undoubtedly acted as spreaders of the infection. With their elimination from the herd together with the thorough sanitary measures now in force at this particular dairy the time is near at hand when further losses from this disease should cease.

The intrapalpebral tuberculin test, a method originated and practised in this Territory for a number of years, has again demonstrated its efficiency in accurately detecting the tuberculous animal. This together with the helpful influence of the Compensation Act should, in a comparatively short time, eliminate tuberculosis from the herds of this Territory.

ANTHRAX.

This disease has ceased to be an active menace to the live stock industry of this Territory as far as the islands of Oahu and Maui are concerned. All quarantine restrictions have been removed from these two islands and the inter-island shipment of live stock allowed without permit except such as may come from the infected areas on Maui.

As far as this island is concerned, considering the prompt and very effective measures taken in the beginning, I think we can safely say that anthrax has been entirely eradicated. The amount of infection still remaining in the soil on Maui where the disease made its appearance is problematical, but considering its early diagnosis and the fact that serum was at hand for immediate use, the prompt burning of all carcasses and the effective quarantine measures established, it is probably slight and the remaining restrictions now in force can soon be done away with.

At Hanalei, Kauai, we have a much more serious condition. Being the first place in which the disease broke out in this Territory there was no serum and vaccine here with which to combat it. Due to the fact that quite a few animals died before any report was made of it and to the fact that nearly a hundred carcasses were buried before burning operations commenced, the pasture lands became and are thoroughly saturated with the infection.

Considering the character of the disease and the great resisting powers of the spore form of the infection to all disinfectants and the experiences gained in similar outbreaks in other countries, these lands must be looked upon as remaining dangerous for a considerable period of time.

That there have been no certain deaths from anthrax reported from Kauai since August 24 points to a highly successful vaccination rather than to a decrease of the original infection. These lands still are and can be proved dangerous to the unprotected animal. Consequently no repeal of the quarantine restrictions now in force, and which have proved so successful in keeping the disease from spreading from its original focus, can be advised.

IMPORTATIONS OF LIVE STOCK.

S. S. Lurline, San Francisco: 2 thoroughbred stallions, 3 thoroughbred colts, 11 thoroughbred mares, Geo. W. Berry.

This shipment brought down by Mr. Berry, superintendent of the Nevada stock farm, constituted a notable and very welcome addition to the racing stock of the Islands. Among them is to be found some of the very best racing blood on the mainland. A few more shipments of this kind are needed.

S. S. Matsonia, San Francisco: 2 cts. poultry, W. F. X. Company; 1 dog, A. K. Shephard; 1 dog, Gus Schuman.

S. S. Sierra, Sydney: 1 dog, H. Whitney.

S. S. Wilhelmina, San Francisco: 20 cts. poultry.

S. S. Maui, San Francisco: 3 cts. rabbits, 1 ct. pigeons, Robert Horner; 2 cts. chickens, W. F. X. Company; 1 cat, Dr. Herbert.

S. S. Hyades, San Francisco: 1 standardbred mare, C. Hastings Judd.

Respectfully submitted,

LEONARD N. CASE,
Assistant Territorial Veterinarian.

Marketing Division

Honolulu, November 17, 1917.

Board of Commissioners, Agriculture and Forestry, Honolulu,
T. H.

GENTLEMEN:—I respectfully submit the following report of the Marketing Division for the month of October, 1917.

The consignments to the Division increased a little during the month. There were 165 consignments received. A list showing the different kinds of produce and the quantities received from each island is enclosed herewith.

The consignment sales for the month amounted to $12,128.60. The profit for the consignment department was $578.89. The butcher department made a profit of $18.60 during the month, the first shown since July first. The retail department made a profit of $26.88, making a total profit of $624.37 for the month.

Enclosed herewith is a statement of operations for the month showing the net profit and a copy of the general ledger trial balance.

Respectfully submitted,

O. B. LIGHTFOOT,
Acting Superintendent.

SEGREGATION OF PRODUCE RECEIVED BY THE MARKETING DIVISION DURING THE MONTH OF OCTOBER, 1917.

Articles:	Total	Oahu	Hawaii	Maui	Molokai	Kauai
Avocados	127	..	127	..	..	..
Asparagus, lbs.	137	137	..	..	..	..
Bananas, Chinese, bches..	509	509	..	..	..	..
Bananas, Cooking, bchs...	12	..	12	..	..	..
Beans, dry, 100 lb. sacks..	89	1	..	81	7	..
Beef, dressed, carcasses..	134	3	10	113	8	..
Cabbage, lbs.	60	60	..	..	..	..
Chickens	154	97	39	..	18	..
Corn, cracked, 100 lb. sacks	20	..	..	20	..	..
Corn, dry, 100 lb. sacks...	300	5	160	135	..	..
Cucumbers, dozen	96	96	..	..	..	..
Ducks, each	63	52	11	..	..	..
Eggs, chicken, dozen	181	84	10	..	87	..
Egg plant, dozen	6	6	..	..	..	..
Fresh island butter, lbs...	18	18	..	..	..	..
Hides	6	3	..	..	3	..
Honey, small cakes	6	6	..	..	..	..
Kukui nuts, 100 lb. sacks.	3	3	..	..	..	..
Limes	8952	..	700	442	7810	..

	Total	Oahu	Hawaii	Maui	Molokai	Kauai
Articles:						
Mutton, carcasses	2	..	..	..	2	..
Ohelo berries, lbs.	300	..	300	..	..	..
Oranges, Hawaiian	2486	2486	..	..	..	..
Papaia, lbs.	32	32	..	..	..	..
Peanuts, large sacks	70	70	..	..	..	..
Peas, dry, 100 lb. sacks	1	..	..	1	..	..
Pigs, live and dressed	18	11	..	..	7	..
Pohas, lbs.	703	..	703	..	..	..
Potatoes, 100 lb. sacks, Irish	6	6	..	..	..	..
Potatoes, 100 lb. sacks, sweets	93	80	..	..	..	13
Potatoes, 100 lb. sacks, red sweets	171	171	..	..	..	..
Rice, 100 lb. sacks	120	120	..	..	..	..
Rabbits	107	107	..	..	..	..
Turkeys	1	1	..	..	..	..
Tomatoes, lbs.	3419	3419	..	..	..	..
Veal, dressed, carcasses	28	10	1	11	6	..

GENERAL LEDGER TRIAL BALANCE, OCTOBER 31, 1917.

Furniture and fixtures	$ 3,224.42	
Automobiles	1,286.50	
Motorcycle	60.00	
Pineapple crates	2,549.80	
Butcher Department	397.83	
Retail Department	157.63	
Seed Account	467.49	
Bank of Hawaii, Ltd.	3,638.78	
Petty Cash	250.00	
Accounts Receivable	3,990.95	
Longley and Westgate	3,000.00	
Consignors' Account		$ 1,722.92
Vouchers payable		831.06
Note Bank of Hawaii		1,000.00
Revolving Fund 1915-1917		4,911.64
Reserve for doubtful accounts		2,414.29
Seed Appropriation 190		1,133.45
Appropriation 206A		919.36
" 206B		4,033.49
" 206C		760.00
Revolving Fund 1917-1919		4,171.40
Surplus		807.74
Consignment expense		333.99
Departmental expenses	950.78	
Cost of merchandise	15,635.64	
General expense	5,815.20	

Butcher sales		10,939.17
Retail sales		5,515.91
Hold Account	220.44	
Commissions		2,415.53
Interest Account	47.27	
Not deposited on 10/31/17	217.22	
	$41,909.95	$41,909.95

TREES RECOMMENDED FOR PLANTING.

By JOSEPH F. ROCK, *Consulting Botanist.*

INTRODUCTION.

The Hawaiian forest must be divided into various zones which, it may be stated in the beginning, are absolutely dependent upon one another for their existence; for example, a middle forest zone depends for its existence on the zone immediately below it as well as on the forest belt above it, no matter of what nature the particular forest may be. If the middle forest zone adjoins a bog region, as is the case on West Maui, Kohala, Hawaii, and Waialeale, it is absolutely essential that such be kept intact; they must not be drained by artificial means, especially not by the method known as Louisiana drain, which method has actually been tried by a particular plantation on the Island of Maui. The disturbing of such a bog region as mentioned, is for obvious reasons absolutely detrimental to the immediate forest below. First the bog vegetation will naturally die out and thus the actual means of water retention will disappear. In time the summit of such a mountain harboring a bog will become bare and erosion will encroach upon the forest below, (as is the case along Hanokawai Gulch on Maui), and eventually destroy the middle forest below, which is so essential for water conservation.

Grazing in the middle forest zone should be absolutely prohibited wherever it is necessary to conserve the forest. Even if no actual damage is done by animals browsing on the trees and undergrowth, harm is done by their tramping over the surface roots of our shallow-rooted trees which destroys the bark and allows rot to set in, which gradually finds its way into the trunk and causes the tree to die.

The lower forest is also essential to the existence of the main watershed. It acts as a barrier against the encroachment of undesirable vegetation such as weeds and grasses, guavas, etc. Care should be exercised to keep this lower forest zone also free from cattle and prevent the spread of honohono (*Commelina nudiflora*) which is death to even such trees as the *Kukui* and *Ohia ai,* as can be seen in the lower forest of Manoa, especially in the narrow valleys now filled with dead trees. To think that one can clear one zone without interfering and injuring the adjacent zone is certainly a mistaken idea.

It may not be out of place to point to the promiscuous cutting of trails, especially in the mountains of Oahu where the mountains are more or less precipitous. The trails are extremely detrimental to the forest. Landslides will always follow such a practice and the surfaces of such landslides are taken up by such pests as the Hilo grass, thus precluding any natural reforestation. The encroachment of Hilo grass into a Hawaiian forest means the death of the latter. The cutting of trails should be done according to the native fashion of following the ridges.

I. THE CONSERVATION OF WATER AND THE PROTECTION OF WATERSHEDS.

The areas of wet forest zone have different contours on the various islands or even on one and the same island. In some places the wet forest covers level tracts of land where there is often bad drainage, especially when the forest had been given over to grazing; the soil in such places is usually very sour and is therefore unable to support a vegetation similar to a well drained area. The Kailua forest on Maui serves as an example of this.

It has been observed that such poorly drained areas usually covered with Hilo grass have lost their native vegetation, (Kohala Awini, Kailua, Maui), save certain species of trees belonging to the *Araliaceae* and *Euphorbiaceae*. This shows that the Hawaiian *Araliaceae* are able to grow not only well but luxuriantly in very sour soil. The planting of such *Araliaceae* as various species of *Tetraplasandra* (*Triplasandra*), which grow readily from seed as well as cuttings, should be encouraged. It would be well to introduce other species of *Araliaceae* from the Philippines and China.

I contend that *Brassaia actinophylla,* a tree belonging to the *Araliaceae* and commonly planted in Honolulu, should be planted as a forest tree in the middle forests especially in sour soil. The tree in question is not attacked by insects, it fruits profusely, is easily grown from cuttings and seeds and as it thrives in the cooler regions of Australia, where it is a native, it is well adapted to our temperate elevation.

Of native trees adapted to sour soil, mention must be made of *Antidesma platyphyllum,* the *Haa* or *Hame* of the natives, which has proved able to exist on lands where all other trees had succumbed to bad drainage.

Where good drainage exists nearly all of our native trees of that region will be found quite suitable. *Acacia Koa* will prove one of the most useful trees.

Of foreign trees the following may be enumerated as suitable for planting in the wet forests:

Albizzia moluccana.—This tree, while short lived, is a valuable forest tree, especially in areas with sour soil. It likes heavy volcanic clay and is a rapid grower. Experiments in Java with this tree have given the following results: Trees 2 years and 9 months old had reached a height of 56 feet; trees 9 years old had a height of 112 feet. It is true the tree does not live longer than 15 to 20 years, but as it volunteers there should always be a good stand. *Albizzia moluccana* is especially valuable as a soil improver. It develops an enormous root system which, when the tree dies, leaves huge channels which act as drainage; besides, the enormous amount of organic matter which such a tree furnishes during its life time can only be of benefit to a sour and clayey soil.

Ficus spp. The genus *Ficus* consists of over 600 species, a large portion of which grows in the Malayan Archipelago, India, and tropical Asia in general. The planting of species of *Ficus* such as the various Banyans *F. bengalensis, F. religiosa, F. benjamina* and hosts of others as forest trees in the wet forest regions cannot be too highly recommended. The writer has observed these various Banyans at elevations from practically sea-level to 4000-5000 feet in the Himalayas.

Seeds of *Ficus* can be obtained easily from the Botanical Gardens of India, and as an ounce of seed produces usually several thousand trees, the propagation of the same would be a comparatively easy matter. It is true that certain insects will be necessary for the fertilizing of the fruits of such *Fici* when once established in the forest. Mr. Muir informs me that the introduction of such insects (usually wasps) is a comparatively easy matter.

Even if no insects for the fertilizing of such Banyan fruits can be secured the trees in question will prove to be extremely valuable, first on account of their longevity. Banyan a thousand years old are no rarity in India. Trees with several hundred trunks covering an area of more than an acre are quite common. Consequently the planting of various species of *Ficus* which produce dense shade and a solid forest cover cannot be too highly recommended.

Other trees to be planted are:

Samanea saman, the Monkeypod.

Toona febrifuga, a Cedar tree already growing in the Territory. It is a quick grower.

Toona calantas, a native of the Philippines. Living plants were introduced by myself from the Philippines. They are rapid growers.

Cedrela australis, a relative of the above mentioned species of Toona, is also a rapid grower and well worth planting.

Pterocarpus indicus, the Narra. There are several specimens of this tree in the Territory. Hardwood cuttings of this tree are the most successful means of propagation. They root very readily and make rapid growth. The tree is adapted for open land especially below the wet forest lands at elevations of 1000 feet and somewhat higher.

The following trees may be recommended for planting in the wet forest zone:

Ficus infectoria, seeds or cuttings;

Ficus bengalensis, seeds or cuttings;

Ficus benjamina, seeds or cuttings;

Ficus indica, seeds or cuttings;

Ficus Roxburghii, seeds or cuttings;

Ficus religiosa, seeds or cuttings;

Ficus hispida, seeds (obtainable in quantities from Hongkong, a rapid grower—for undergrowth).

Ficus cunninghamii, known as the Java willow, a very large spreading tree with feathery branches and small leaves.

Ficus elastica, Ficus macrophylla, Ficus regia, seeds of these may be obtained from any Botanic Garden in Ceylon or India.

At four thousand to six to seven thousand feet *Erythrina arborescens,* a common tree at Darjeeling, should be planted. It is able even to stand heavy snowfall and is a quick growing tree.

For up country or in wet forests may also be planted:

Dalbergia sisso and *Albizzia Lebbek,* both of which grow at altitudes up to 5000 and 6000 feet. In the Himalayas I have observed both of them at 5000 feet and higher. They do as well in wet as in dry regions.

Eugenia aquea, up to 5000 feet, (seeding trees in Honolulu).

Eugenia sandwicensis (*Ohia ha*), grows easily from seed, the best seed being obtainable from Maui and Oahu.

Parkia timoriana, Parkia Roxburghii, Parkia Africana, Parkia biglandulosa, all splendid tall, quickly growing trees of the lower forest zone; seedlings growing at the College of Hawaii.

Immediately below the wet forest *Kukui* plantings may be encouraged with *Erythrina* trees, such as *Erythrina lithosperma* and *Erythrina umbrosa,* both quick and tall growing trees; they will thrive up to an elevation of 100-3000 feet.

Low-lands: Various species of *Terminalia* as *Terminalia sumatrana, Terminalia belerica, T. chebulia,* seeds easily obtainable from India or Java, belong to the species already established here.

Pelthphorum inerme, up to 1500 feet, drier regions.

Schizolobium excelsum, a large, quick growing tree up to 1500 feet.

Spathodea campanulata, African Tulip tree, thrives up to 1500 feet.

Ailanthus excelsa, large, quick-growing tree.

Artocarpus integrifolia (from seed).

For higher levels, up to 4000 feet; *Acacia melanoxylon; Calophyllum Walkeri,* (seeds obtainable from Ceylon); various *Eucalyptus,* especially *Eucalyptus alba,* in rain forests. *Pinus longifolia,* of which seeds are on hand, may well be considered as a timber tree for the higher elevations up to snow. (For information on the species in question see Indian Forest Memoirs, Vol. I, *Pinus longifolia,* A Sylvicultural Study, by R. S. Troup, 1916.)

II. THE PREVENTION OF SAND OR DUST DRIFTING.

As far as the checking of drift sand is concerned there may be recommended the following native plants:

Sesbania tomentosa, a leguminous plant, prostrate and creeping over large surfaces of sand which grows well at the beach or on dunes farther inland.

Heliotropum anomalum.

Argyraea tiliaefolium (*Pilikai*), a stout and strong climber and runner belonging to the Convolvulus Family.

Zoia pungens, a species of grass already plentiful; very useful in checking sand drift.

Scaevola frutescens (*Naupaka Kahakai*).

Of foreign plants the following will be found suitable to prevent sand drifting:

Mesembrianthem spectablile, Mesembrianthem aequilaterale, Mesembrianthem litorale (Ice plant). The latter two are employed extensively against sand drift and for the reclaiming of land in Southern California. It grows easily from portions of plants which can be secured readily.

It is a difficult matter to recommend trees for the stopping of sand drifts. In my opinion it is necessary first to check the drift by low-growing plants such as have been recommended.

The planting of species of *Agave* and *Fourcroya* will be found useful; also *Sanseviera* and various succulent *Euphorbia* as *E. catimando.*

Of trees, mention may be made of *Prosopis velutina, Zizyphus jujuba, Erythrina spp.*

Especially recommended is *Leptospermum laevigatum.* It is extremely useful in arresting drift sand either at sea shores or in sand deserts, and is also a splendid hedge plant. It is a native of Australia, though seeds can be obtained from Southern California.

Calophyllum inophyllum, the native *Kamani,* is a tree which should be planted in groves along beaches and inland where there is likely to be danger of sand drift.

Terminalia catappa may also be used.

Melaleuca parviflora, useful as a sand stay.

Myoporum humile is equally useful.

III. THE REFORESTATION OF ERODED AND ARID AREAS ON SLOPES OF MOUNTAIN RANGES AND ON PLAINS.

Of certain native trees to be recommended for planting in the dry or arid regions of these islands, it may be stated that nearly all of them are extremely slow growers.

Those recommended for planting are:

Sapindus oahuensis (volunteers freely);

Sapindus saponaria;

Acacia Koaia. The *Koaia* of the natives, of which seeds can be obtained from trees above *Kawaihaeuka* where it is plentiful.

Osmanthus sandwicensis, the *Pua* or *Olopua,* a very common tree species of *Sideroxylon.*

Sophora chrysophylla, the *Mamani,* will grow well in those regions. It is common on the lava flows at low elevations, also in dry gulches on Lanai.

Myoporum sandwicense, the *Naio.*

Erythrina monosperma, the *Wiliwili.*

Of foreign trees, the following may be recommended:

Erythrina indica, Erythrina umbrosa, Erythrina arborescens, Erythrina caffra, Erythrina fusca, Erythrina tomentosa, Erythrina corallodendron, Erythrina ovalifolia.

Azadirachta indica, the Nim or Neem tree of India; a very important tree in India and one of the widest spread trees in that country, especially through the arid regions.

Melia azedarach, already naturalized on Kauai. It is not such a useful tree as the former; it is spread easily by birds and when growing in groves is not to be despised.

Alectryon excelsum, a native of New Zealand and a relative of the Hawaiian *Alectryon macrococcus,* which grows in the lower Waianaes. The former is a handsome tree and well established in Southern California where seeds can be obtained. Seedlings in the College of Hawaii aboretum.

Various species of *Callistemon* or bottle brushes. Seeds from California are growing at the College. Various species of *Melaleuca* may also be grown. *Tristania,* large trees of the dry regions, seeds obtainable in California, seedlings growing at the College of Hawaii.

An effort should be made to introduce various *Acacias* from the arid regions of Africa. *Acacia arabica* is already in Honolulu bearing seeds. ·*Acacia giraffae* or *A. Seyal.* This species forms woods of enormous extent in the Black Mountains of Africa in dry, stony places.

Acacia arabica deserves special mention and the following may be stated:

The *Gum arabic, Acacia arabica,* should be planted in our arid regions; it prefers a dry soil and it is never leafless. It can be grown as a forest crop in any of the dry regions in the Islands. The wood is excellent as fuel and will well compete with *Kiawe.* It yields a valuble timber while luxuriating in the poorest waste lands. It is an excellent tree for poor soil and exposed situations, and continues to flourish during long periods of drought. It is one of the most useful trees for broad-cast sowing, as the seed germinates readily and is hardy and independent of rain. It can be planted as a thick belt along roads to form a roadside avenue, which would produce a vast amount of fodder. The seeds embedded in a nutritious pod would be spread by cattle quite as easily as the algaroba or kiawe. It is of rapid growth and as it requires no water and improves sterile tracts of land, it should by all means be given a fair trial. The tree will live up to a hundred years or even more. There is one tree of this species in

Honolulu. It was introduced by Dr. Hillebrand in whose former grounds it is still in existence though crowded out by large trees which prevent it from receiving the necessary sunlight. It flowers and fruits profusely. Seedlings could be started from the seeds of this lone tree. Or still better, seed could be imported from India in large quantities and sown broadcast in lee side valleys of the Waianae Mountains and elsewhere. The bark may be made use of as it contains a large amount of tannin. A tree 8-10 years old will yield half a ton of bark.

Acacia catechu, already growing in the Territory.

Species of *Pithecolobium* from Mexico.

Species of *Prosopis* other than *P. juliflora.*

Schotia latifolia, Schotia brachypetala, specimens growing at College of Hawaii from seeds, the latter obtainable from South California. Leguminous trees with handsome red flowers from the dry regions of South Africa.

This list can be greatly extended but the above will furnish a good working basis. The Consulting Botanist will at all times be ready to help and furnish advice as he is in communication with various botanists over the world, many of whom he knows personally. He is ready to offer his services in securing these seeds.

In conclusion he wishes to emphasize the value of certain species of genus *Ficus* for reforestation of the wet regions.

BY AUTHORITY.

TERRITORY OF HAWAII.

BOARD OF COMMISSIONERS OF AGRICULTURE AND FORESTRY.

RULE XIII.

DIVISION OF ANIMAL INDUSTRY.

Rule and Regulation of the Board of Commissioners of Agriculture and Forestry concerning the Keeping and Breeding of Rabbits.

The Board of Commissioners of Agriculture and Forestry of the Territory of Hawaii hereby makes the following rule and regulation pertaining to the keeping and breeding of rabbits in the Territory of Hawaii in accordance with Act 50 of the Session Laws of Hawaii of 1917.

Section 1. Every keeper or breeder of rabbits or hares, whether the same are kept singly, as pets or in numbers for their meat, skins, or other purposes, must obtain from the Board of Agriculture and Forestry a permit to keep or breed rabbits.

Section 2. In order to obtain such permit it is necessary for the applicant to submit to the Board of Agriculture and Forestry an affirmed statement to the effect that he will use due diligence and take every possible precaution to the end that such rabbits, for whatsoever purpose kept, remain confined.

Section 3. Applicants for permits must obtain from the said Board or its local representative an application blank to be filled in and returned.

This rule shall take effect upon its approval by the Governor of Hawaii.

Approved this 30th day of October, 1917.

LUCIUS E. PINKHAM,
Governor of Hawaii.

Honolulu, Territory of Hawaii.

RULES AND REGULATIONS OF THE TERRITORIAL MARKETING DIVISION.

Board of Commissioners of Agriculture and Forestry. Territory of Hawaii.

SHIPPING MARK:

All consignments of goods for the Division must be marked "T. M. D." The name and post office address of the consignor must be on each package in order to prevent confusion.

POST OFFICE ADDRESS:

Address all mail to the Territorial Marketing Division, P. O. Box 1237, Honolulu, T. H.

BILLS OF LADING:

Where goods are shipped by rail or steamer, a copy of the Bill of Lading must be mailed to the Division at the time of shipment or earlier if possible.

FREIGHT:

The freight on consignments may be charged to the account of the Division. In such cases the amount will be deducted on the account sales.

COMMISSION:

A five per cent commission will be charged on the gross sales on all consignments and deducted on the account sales.

DRAYAGE:

A drayage charge of one cent a cubic foot measurement or fifty pounds weight will be charged on all shipments hauled from the wharves or railroad depot, with a minimum charge of five cents. Hauling goods for producers in the city, to the Division, will be at the regular rates charged by the draying companies.

COLD STORAGE:

One-quarter of a cent a pound per month or fraction thereof will be charged for cold storage on all dressed meats.

LIVE STOCK:

Unless live stock can be sold immediately at a fair price, it will be slaughtered and put in cold storage, the slaughtering and cold storage charges being deducted on the account sales.

FEED:

A charge of one cent a day will be made for each head of poultry held on consignment at the Division.

CANDLING:

A charge of one cent a dozen will be made for candling each dozen unstamped eggs received. Eggs stamped with the name and guarantee of the producers will not be charged for candling.

GRADING:

A charge will be made for actual expenses for grading and packing consignments received in poor condition.

SETTLEMENTS WITH CONSIGNORS:

Account sales will be rendered as soon as the consignment is disposed of and settlement will be made in full at the same time if funds are available. In no case will settlement be made later than the 10th of the month following date of sale.

CREDIT ACCOUNTS:

No consignor will be allowed to purchase merchandise against his consignment account unless he has a credit cash balance due him on the books of the Division, or a consignment of non-perishable produce, which when sold will more than pay for any goods purchased. No credit accounts will be opened on the books for retail customers. Persons ordering seed by mail must enclose check or post office money order to cover cost before seed will be sent.

Only business houses of good financial standing and government institutions will be given credit, and these will be required to settle in full within thirty days from date of rendering account.

All buyers and sellers shall conform to these rules and regulations in order to claim any right under Act 206 of the Session Laws of 1917, Territory of Hawaii.

Approved October 29, 1917.

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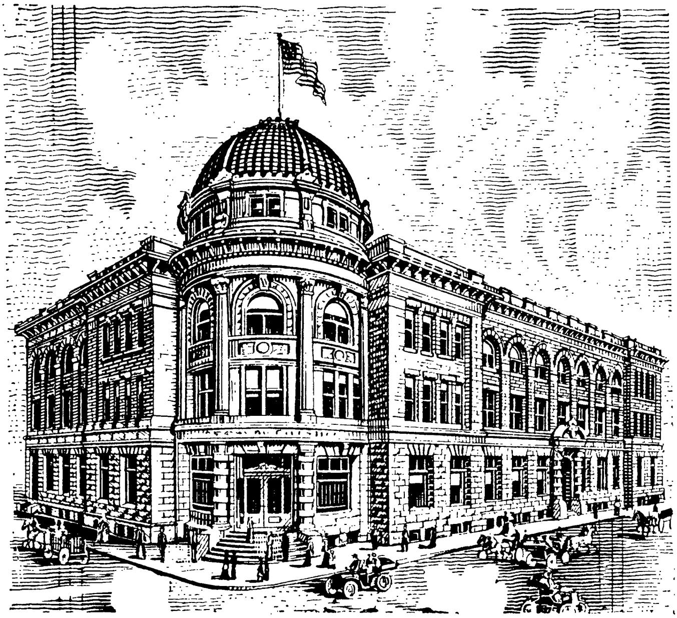

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